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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,048	12/31/2003	Jeffry Golden	42173-018	8958
29493	7590	01/31/2005	EXAMINER	
HUSCH & EPPENBERGER, LLC 190 CARONDELET PLAZA SUITE 600 ST. LOUIS, MO 63105-3441			CHIN, BRAD Y	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 01/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/750,048

Applicant(s)

GOLDEN, JEFFRY

Examiner

Brad Y. Chin

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/31/03, 9/21/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 59-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 59 and 60 is/are allowed.
- 6) ☒ Claim(s) 61-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/8/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

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DETAILED ACTION

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sizer et. al. [U.S. Patent No. 5,843,374].

Sizer teaches a system for decontaminating a contaminated surface, the system comprising:

an apparatus for spraying a photosensitizer on the surface (See Specification, Summary of the Invention – sterilization apparatus for applying ultraviolet radiation synergistic sterilant, i.e. spraying hydrogen peroxide onto the surface of the packaging material, in sterilizing transparent packaging material);

a light source for illuminating the sprayed contaminated surface (ultraviolet lamp 20 with preferred gas KrCl for illuminating/sterilizing the material [contaminated surface] – See Specification, col. 7, lines 23-27 and 34-40);

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a temperature control system for removing the waste heat from the light source (See Specification, col. 6, lines 47-60 – temperature control system comprised of a cooling fluid flowing through passageways 38 on the exterior of the lamp 20 thereby removing heat from the excimer ultraviolet lamp 20. Alternatively, the passageways may be located inside of the lamp 20. The cooling fluid is maintained at a predetermined temperature which is below the operating temperature of the excimer ultraviolet lamp 20 in order for the cooling fluid to act as a heat sink to remove heat from the lamp 20).

Sizer fails to teach that the temperature control system uses the waste heat from the light source to heat the photosensitizer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the temperature control system described in Sizer to facilitate use of the waste heat from the light source to heat the photosensitizer by adjusting the flow rate of the exhaust heat cooling fluid of the lamp cooling system and directing it to the photosensitizer because it would have been obvious to one knowledgeable with heat exchangers to recycle the waste heat of the light to the photosensitizer for use in facilitating the reaction between the photosensitizer and the ultraviolet light.

2. Claims 62-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over the non-patent literature, Bayliss et. al., "The Combined Effect of Hydrogen Peroxide and Ultraviolet Irradiation on Bacterial Spores", Journal of Applied Bacteriology 47:263-269 (1979) in view of Blidschun et. al. [U.S. Patent No. 4,680,163], and further in view of Vitta [U.S. Patent No. 4,934,396], Stewart et. al. [U.S. Patent No. 5,551,102], and Sutton [U.S. Patent No. 5,706,846].

Bayliss teaches a method for decontaminating the surface of a contaminated object, the method comprising:

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applying a photosensitizer [hydrogen peroxide – a commonly known photosensitizer] onto the contaminated surface and illuminating the sprayed surface with light to cause chemical reactions to decontaminate the surface (See p. 263 – ultraviolet [light] irradiation of spores of *Bacillus subtilis* in the presence of hydrogen peroxide produces a rapid kill which is up to 2000-fold greater than that produced by irradiation alone).

Bayliss fails to teach that (1) the contaminated object is surrounded with a portable barrier, (2) the method of decontaminating the contaminated object comprises spraying the photosensitizer onto the contaminated object, and (3) the photosensitizer is electrically charged, providing that excess photosensitizer is attracted to and deposits upon the portable barrier.

Vitta, Stewart, and Sutton teach mobile or portable decontamination systems, which allow a user to surround a contaminated object for decontamination. Vitta, Stewart, and Sutton represent only a number of systems that provide a portable or mobile barrier around a contaminated object or subject.

Blidschun teaches the use of a sterilizing agent, hydrogen peroxide, which is ultrasonically atomized to form a mist, e.g. for spraying, charged and subsequently directed to, e.g. spraying, the [contaminated] surface to be sterilized by an electrostatic field. The electrostatic field causes the exceedingly small charged droplets, which form the mist of the sterilizing agent to be conveyed to the surface (See Specification, col. 2, line 58 to col. 3, line 13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Blidschun with Bayliss because Bayliss teaches the effectiveness of illuminating a photosensitizer, such as hydrogen peroxide, with ultraviolet light for killing bacteria spores on contaminated objects or surfaces. Blidschun broadens the applicability of Bayliss' method by teaching the application of spraying an electrically charged

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photosensitizer onto a contaminated object or surface. It would have been obvious to combine such teachings such that the user would have the ability to direct an electrically charged photosensitizer to a specific object or surface within a room or barrier for reaction with the ultraviolet light. The electrically charged characteristic of the photosensitizer would allow the photosensitizer to adhere better to an object or surface, as taught in Blidschun.

It would also have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the decontamination teachings of Blidschun and Bayliss into Vitta, Stewart and Sutton because Vitta, Stewart, and Sutton each provide the motivation for a portable or mobile system for decontaminating objects or surfaces, where use of such methods as taught by Blidschun and Bayliss would provide another means for decontaminating objects or subjects within the mobile or portable decontamination systems. Mobility or portability would provide one of ordinary skill in the art with the ability to provide decontamination systems using photosensitizers and ultraviolet light in multiple locations. Additionally, it would have been obvious that spraying the electrically charged photosensitizer toward an object or surface would create the possibility of overspray where excess photosensitizer would be attracted to and deposited upon the surfaces of the portable barrier in which the object or surface is decontaminated.

Regarding claims 63, it would have been obvious to one of ordinary skill in the art at the time the invention was made to electrically charge the portable barrier, i.e. the room in which the object or surface is being decontaminated, to attract the excess electrically charged photosensitizer because electrically charging the barrier would prevent excess sprayed photosensitizer from accumulating on the contaminated object or surface. This procedure would allow for a more uniform layering of photosensitizer onto the object or surface, enhancing

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the effectiveness of the ultraviolet light reaction with the photosensitizer. Additionally, it would prevent excess photosensitizer from hanging in the air.

Regarding claim 64, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ground the barrier to attract the electrically charged photosensitizer to the surfaces of the barrier and thus avoid unwanted electrical charging of the spraying mechanism.

Regarding claim 65, Bayliss further teaches that the light includes UV light (See Bayliss, p. 263 – ultraviolet [light] irradiation of spores of *Bacillus subtilis* in the presence of hydrogen peroxide produces a rapid kill which is up to 2000-fold greater than that produced by irradiation alone).

Regarding claim 66, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the barrier substantially opaque to UV light preventing loss of ultraviolet light from within the portable barrier and subsequently protecting individuals, objects, or surfaces outside of the portable barrier from exposure to the ultraviolet light.

3. Claims 67-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vitta, Stewart, and Sutton in view of Bayliss and Blidschun.

Regarding claim 67, Vitta, Stewart, and Sutton teach a method of decontaminating the surface of a contaminated object, the method comprising:

surrounding the contaminated object with a barrier having an entrance and an exit therein (See Fig. 1 of Vitta; See Figs. 1 and 2 of Stewart; See Fig. 11 of Sutton);

Vitta, Stewart, and Sutton fail to teach (1) establishing an air flow into the exit and out of the entrance, (2) spraying a photosensitizer onto the surfaces of the object, and (3) illuminating the sprayed surfaces of the object with light.

Bayliss and Blidschun teach the methods of spraying an electrically charged photosensitizer onto an object or surface and illuminating the sprayed objects or surfaces with ultraviolet light for killing bacteria spores, as previously defined.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the decontamination teachings of Blidschun and Bayliss into Vitta, Stewart and Sutton because Vitta, Stewart, and Sutton each provide the motivation for a system for decontaminating objects or surfaces, where use of such methods as taught by Blidschun and Bayliss would provide another means for decontaminating objects or subjects within these systems. Combining the mobility or portability of Vitta, Stewart, and Sutton with such decontamination methods of Bayliss and Blidschun would provide one of ordinary skill in the art with the ability to provide decontamination systems using photosensitizers and ultraviolet light in multiple locations.

Stewart teaches the importance of preventing contaminated air from mixing freely with adjacent compartments (See Specification – col. 4, lines 19-22). It would have been obvious to one of ordinary skill in the art to prevent contaminated air from escaping from decontamination areas out into “clean” areas. Accordingly, it would have been obvious to establish an air flow that would direct air out of the room through a filtered exhaust or that would direct air into the exit and out of the entrance of the contamination area, preventing contaminated air from moving out of the exit and towards the “clean” areas.

Regarding claim 68, Bayliss further teaches that the light includes light of wavelengths between about 200 nm and about 320 nm (See p. 263 – ultraviolet irradiation of the spores at wavelength 254 nm).



***Allowable Subject Matter***

4. Claims 59-60 are allowed. The following is a statement of reasons for the indication of allowable subject matter: Claims 59 and 60 teach a method of decontaminating a contaminated non-conducting surface, the method comprising: providing a conducting backing for the non-conducting surface; spraying a photosensitizer onto the contaminated surface, the photosensitizer being electrically charged so that it is attracted to the contaminated surface; and illuminating the sprayed surface with light. The light includes wavelengths between about 200 nm and about 320 nm. The prior art identified above does not teach such a method as claimed; more specifically, the prior art does not disclose a method of decontaminating a contaminated non-conducting surface where the method provides for a conducting backing for the non-conducting surface.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brad Y. Chin whose telephone number is 571-272-2071. The examiner can normally be reached on Monday – Friday, 8:00 A.M. – 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Warden, can be reached at 571-272-1281. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

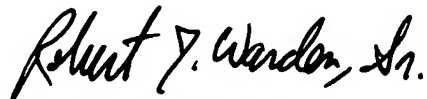
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

byc

January 7, 2005



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